

Hif1an Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Hif1an

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hif1an* gene. The schematic diagram is as follows:



- The *Hif1an* gene has 2 transcripts. According to the structure of *Hif1an* gene, exon3-exon7 of *Hif1an-201* (ENSMUST00000040455.4) transcript is recommended as the knockout region. The region contains 577bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hif1an* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice homozygous for a null allele have metabolic, behavioral and cardiopulmonary abnormalities.
- The *Hif1a* gene is located on the Chr19. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Hif1an hypoxia-inducible factor 1, alpha subunit inhibitor [*Mus musculus* (house mouse)]

Gene ID: 319594, updated on 5-Nov-2019

Summary

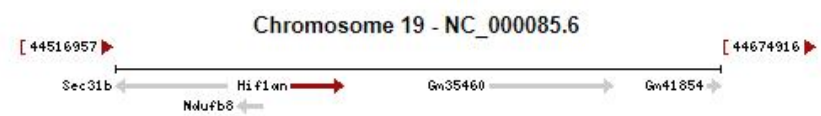
- Official Symbol** Hif1an provided by [MGI](#)
- Official Full Name** hypoxia-inducible factor 1, alpha subunit inhibitor provided by [MGI](#)
- Primary source** [MGI:MGI:2442345](#)
- See related** [Ensembl:ENSMUSG00000036450](#)
- Gene type** protein coding
- RefSeq status** VALIDATED
- Organism** [Mus musculus](#)
- Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
- Also known as** FIH; FIH1; 2310046M24Rik; A830014H24Rik
- Expression** Ubiquitous expression in heart adult (RPKM 12.4), CNS E11.5 (RPKM 11.6) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 19; 19 C3 [See Hif1an in Genome Data Viewer](#)

Exon count: 8

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	19	NC_000085.6 (44562854..44576274)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	19	NC_000085.5 (44637344..44650764)

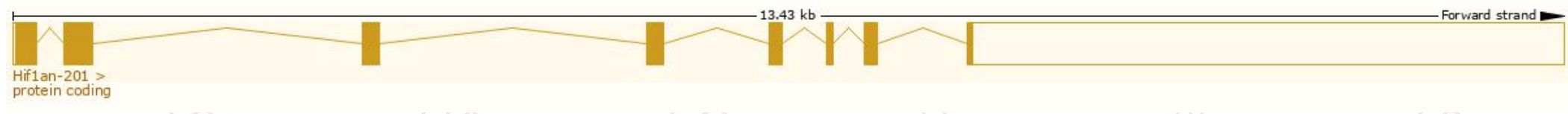


Transcript information (Ensembl)

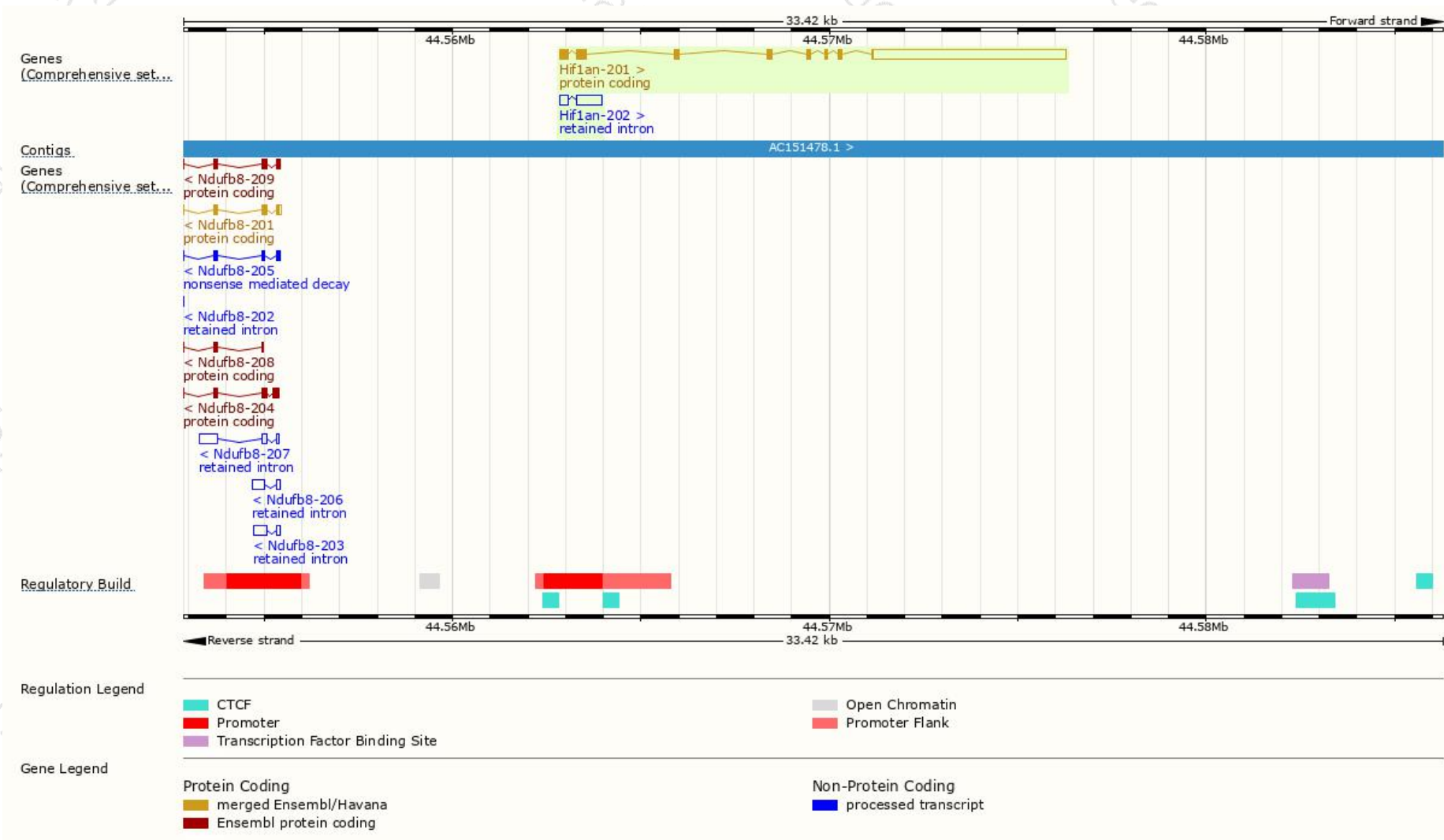
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hif1an-201	ENSMUST00000040455.4	6194	349aa	Protein coding	CCDS29852	Q8BLR9	TSL:1 GENCODE basic APPRIS P1
Hif1an-202	ENSMUST00000131032.1	868	No protein	Retained intron	-	-	TSL:1

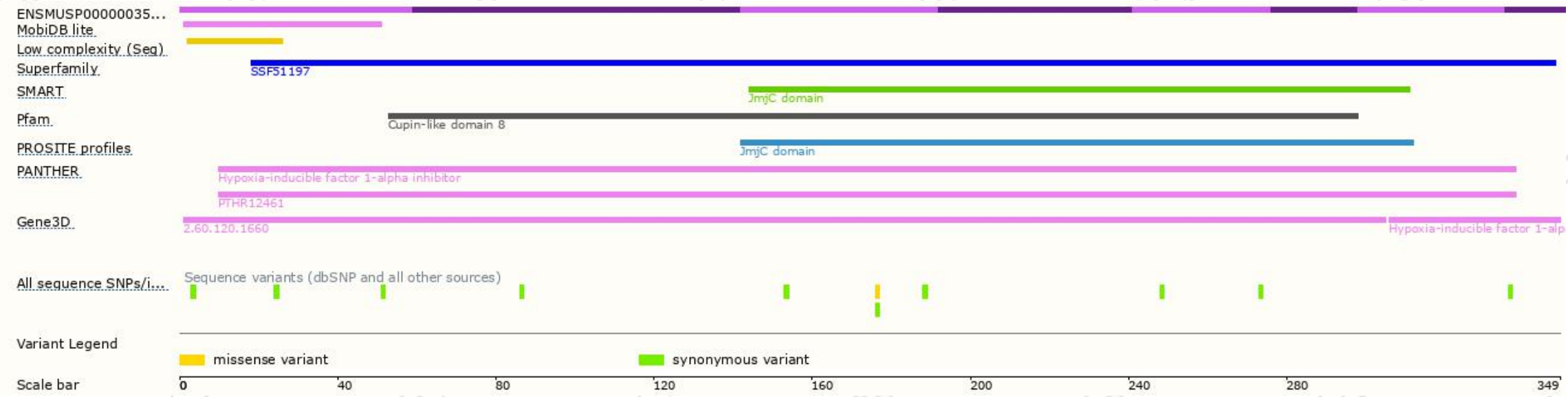
The strategy is based on the design of *Hif1an-201* transcript,The transcription is shown below



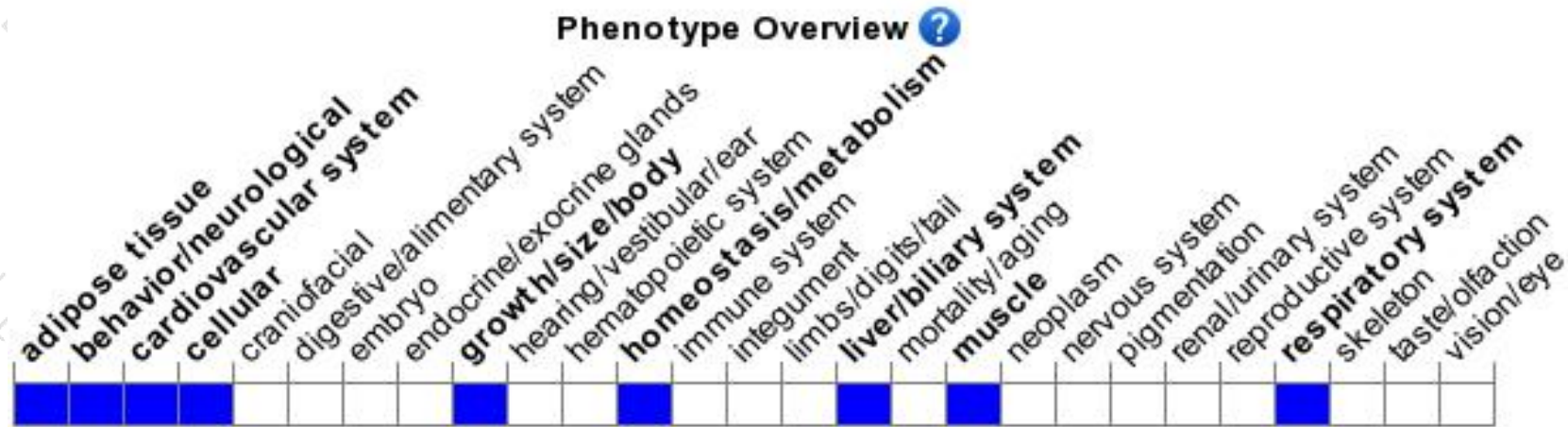
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

According to the existing MGI data, Mice homozygous for a null allele have metabolic, behavioral and cardiopulmonary abnormalities.

If you have any questions, you are welcome to inquire.

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